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Fundamental physical concepts

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Fundamental Concepts in Physics

1. Space, s
2. Time, t
3. [spacetime](#), ST
4. [reference system](#) or Frame of Reference (RS)
5. Motion
6. Measurement
7. [observable](#)
8. Universal constants: Planck's constant (h , the speed of light, c , gravitational constant, G ; hyperfine constant, e ; cosmological constant, λ
9. Matter
10. Mass
11. Particle
12. Elementary Particles and [quarks](#)
13. Energy: Conservation Laws, [Hamiltonian operator](#), energy eigenvalues. eigenstates, [Lagrangian](#), Photons/Electromagnetic [radiation](#)
14. Fields: Electromagnetic, magnetic, electrical; nuclear; gravitational
15. Gravity
16. String/strings
17. Oscillatory motion, Oscillation, Periodic and Quasi-periodic motions
18. Wave
19. WaveFunction, Hermitian [operator](#), non-Hermitian operator, Super-operator, Prigogine Time operator
20. Period of oscillation
21. Frequency
22. Oscillation
23. Force
24. Reaction force
25. Interactions: [strong interactions](#): quark-quark, quark-pair, quark-gluon, gluon-gluon interactions, etc; Electromagnetic Interactions, Electro-weak interactions, gravitational interactions and [gravitons](#)
26. Potential
27. virtual particles
28. Kinetics and [dynamics](#), Chaotic Dynamics, Quantum Dynamics
29. [system](#): closed, open, dynamic; classical or Newtonian, mechanical, relativistic, [Thermodynamic](#), quantum; simple, chaotic, complex, super-complex, ultra-complex, hyper-complex
30. [dynamical system](#)

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31. [entropy](#), S
32. [Mechanical work](#)
33. [temperature](#)
34. [heat](#), Q
35. Enthalpy, H
36. Partition [function](#), Z

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Remark

*1. Unlike Mathematical Axioms that have all terms defined mathematically, the Axioms of Physics, oftentimes called "Postulates", are defined in terms of physical concepts that may also relate to measurements and may include basic physical assumptions derived on an experimental and physical-conceptual basis, such as the fundamental axiom of Local Quantum Field Theory, or Axiomatic Quantum Field Theory, also called Algebraic Quantum Field Theory (AQFT), that all quantum measurement and observations involve *local* interactions in spacetime.

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Also defines: fundamental physical concepts, Physics axioms, local interactions, quantum measurement, Local Quantum Physics, Algebraic Quantum Field Theory, AQFT, Axiomatic Quantum Field Theory, HQFT, fundamental physics concepts, energy, field, wave, mass, universal constant, speed of light, reference frame, Lorentz transformations, Poincare transformations group, Lorentz group of transformations, energy-mass law, quantum fields, gauge fields, non-Abelian physical theories, motion, universal constant, cosmological constant

Keywords: local interactions, quantum measurement, Local Quantum Physics, Algebraic Quantum Field Theory, AQFT, Axiomatic Quantum Field Theory, HQFT, fundamental physics concepts, energy, field, wave, mass, universal constant, speed of light, reference frame, Lorentz transformations, Poincare transformations group, Lorentz group of transformations, energy-mass law, quantum fields, gauge fields, non-Abelian physical theories, motion, universal constant, cosmological constant

Cross-references: [function](#), [heat](#), [temperature](#), [work](#), [entropy](#), [dynamical system](#), [Thermodynamic](#), [system](#), [dynamics](#), [gravitons](#), [strong interactions](#), [operator](#), [radiation](#), [Lagrangian](#), [Hamiltonian operator](#), [quarks](#), [observable](#), [reference system](#), [spacetime](#)

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